8.4 HW Key p438 13-21 odd 29, 35

291

13. $V(\pm 4, 0)$ $C(0,0)$
$F(\pm 3, 0)$ $a=4$ $c=3$

$16 = b^2 + 9$
$7 = b^2$

$$\frac{x^2}{16} + \frac{y^2}{7} = 1$$

15. $V(-2,4)\ (-2,-4)$
$F(-2, 2\sqrt{3})\ F(-2, -2\sqrt{3})$
$C(-2,0)$ $a=4$ $c=2\sqrt{3}$

$16 = 12 + b^2$
$4 = b^2$

$$\frac{(x+2)^2}{4} + \frac{y^2}{16} = 1$$

17. $V(2,12)\ (2,-4)$
Minor $(4,4)\ (0,4)$
$C(2,4)$ $a=8$ $b=2$

$$\frac{(x-2)^2}{4} + \frac{(y-4)^2}{64} = 1$$

19. $2a = 16$ $2b = 9$
$a = 8$ $b = 4.5$
$C(5,4)$

$$\frac{(x-5)^2}{64} + \frac{(y-4)^2}{20.25} = 1$$

21. Minor $(9,5)\ (9,-5)$
$b = 5$ $C(0,0)$
$F(12,0)\ (-12,0)$ $c = 12$

$a^2 = 25 + 144$
$a^2 = 169$

$$\frac{x^2}{169} + \frac{y^2}{25} = 1$$

29. $\frac{(x+8)^2}{144} + \frac{(y-2)^2}{81} = 1$

$C(-8, 2)$

$F(-8 \pm 3\sqrt{7}, 2)$

$144 = 81 + c^2$

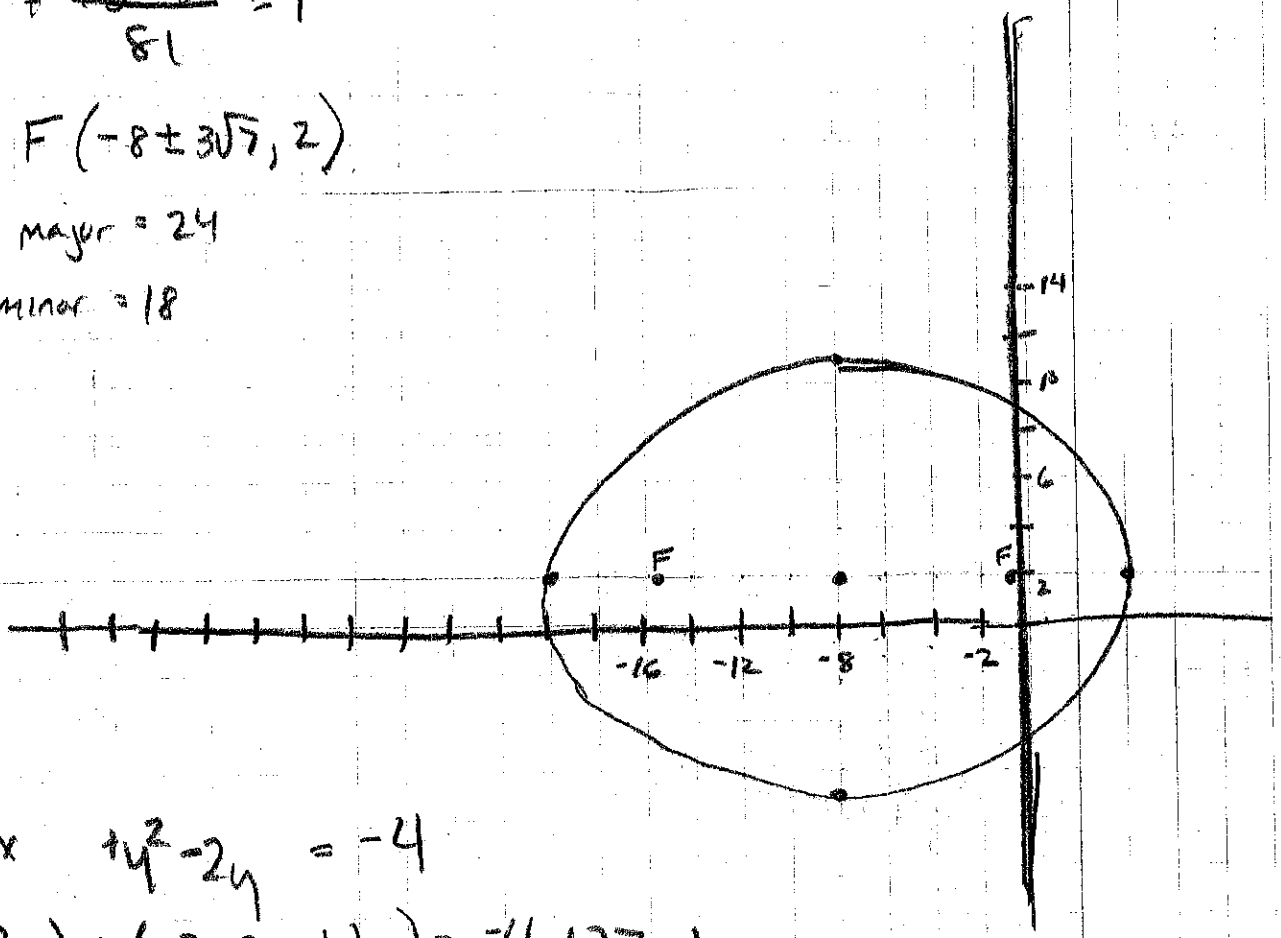
$63 = c^2$

$3\sqrt{7} = c$

$7.9 \approx$

major = 24

minor = 18



35. $3x^2 + 18x + y^2 - 2y = -4$

$3(x^2 + 6x + 9) + (y^2 - 2y + 1) = -4 + 27 + 1$

$3(x+3)^2 + (y-1)^2 = 24$

$\frac{(x+3)^2}{8} + \frac{(y-1)^2}{24} = 1$

$C(-3, 1)$

$a = 2\sqrt{6} \approx 4.9$

$b = 2\sqrt{2} \approx 2.8$

$c = 4$

$F(-3, 5)$

$F(-3, -3)$

major $= 4\sqrt{6}$

minor $= 4\sqrt{2}$